# THOROUGHBRED™

CONCEPT OMEGA® CORPORATION

*Thoroughbred*
*DISKPAK*™

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## (THOROUGHBRED/OS DIAGNOSTIC)

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# 1. WHY USE DISPAK?

DISPAK is a utility program that is intended for use on systems running Thoroughbred/OS and is used to maintain the integrity of files on your hard disk by locating and correcting file allocation problems and also to allow you to efficiently manage the used and available space on your hard disk. The following conversation should give you some insight into how and when to use DISPAK. Also included is a Disk Map Utility that will allow you to get a printed report on your disk allocation.

1. Why do I need the DISPAK Utility?

   a) To consolidate available disk sectors into one large contiguous area on your disk.

   b) To identify any disk allocation errors that have occured on your disk due to operating system hangs, improper system shutdown or power failures.

   c) To separate and identify any overlapping files that were caused by operating system hangs, improper system shutdown or power failures.

2. Why do I need my available disk sectors consolidated?

   a) Thoroughbred/OS requires that contiguous space be available for new data files that are created. If you need to create a 1500 sector file and there are 10 gaps of 1000 sectors each (totaling 10,000 available sectors) on your disk, you will not be able to create your file because the sectors available are not contiguous.

   b) Disk operations can be done more efficiently if available disk space is on the high numbered sectors and all data files are on the low numbered sectors.

3. Why do I need to separate overlapping files?

   a) Files that overlap the same physical space on disk are more than likely unusable. There is a chance that one of the files may be salvageable once separated.

   b) If an overlapping file is erased, the space that is made available is incorrect and other files created in this erroneous space can be destroyed.

4. How often does the DISPAK utility need to be run?

   a) Once at the beginning or end of each work day. The
      DISPAK utility goes through a validation of your file
      system before it does a compress of your disk files.
      The validation phase takes 3 to 5 minutes depending
      on how many files you have on your system. If the
      integrity of your disk file system is compromised,
      the situations that can be corrected will be
      corrected automatically and the ones that require
      decisions on your part will be itemized for you to
      take appropriate action. After the validation phase,
      you will have the option of doing a compress of your
      disk files.

   b) Any time your system is terminated abnormally by
      operating system hang, power failure or improper
      shutdown by an operator.

5. How often does the compress of the disk files need to be done?

      When you cannot create a file in the disk gaps that
      are available on your disk.

6. When the disk compress is run, can I be assured that I can
   create any size file?

      No! Your available disk space will be consolidated
      into one contiguous area and you can only define
      files that will fit in this area.

7. When I select to run the disk compress, how long will it
   take to do the disk compress?

      From 5 minutes to 1 hour - this will depend on how
      fragmented your available disk is. Normally, the
      time should be between 30 to 45 minutes.

8. How does DISPAK work?

      DISPAK is simple to run and requires a minimum amount
      of operator intervention. The automatic procedures
      are executed in the following order:

   a) Verify Step
      The verify step in DISPAK will read the hard disk
      to determine the validity and current version of
      the operating system. Next DISPAK scans every
      directory on the disk to verify that file names
      are valid and the space allocated by the operating

system is not occupied by more than one file .
If no errors are found in this step the program
will skip the reconstruct step.

b) Reconstruct Step
The reconstruction step of DISPAK will construct
a new AVS (available sector table) based on the
directory contents determined in the verify step.
DISPAK will separate any files that overlap and
inform the user of any impending problems before
the compress step can be executed.

c) Compress Step
The compress facility in DISPAK uses the new AVS
table to identify the computed free space (VERIFY
STEP) on the disk and moves all programs and files
together creating one single free space area at
the end of the disk (high sector numbers). If the
user checks the AVS table after this step there
will be only one entry.

# 2. RUNNING DISPAK

Before you begin, please note the following:

1. DISPAK does not substitute for proper backup of data.
2. You MUST run Dispak from the floppy diskette.
3. You MUST have a printer online.
4. You MUST be the only operator on the system.
5. You MUST be using the control terminal (T0)

## Configuring the Software

The following steps will enable Thoroughbred/OS to locate the
software on the master diskette that you received:

a) Goto the BASIC Utilties Menu and select the
the Switch Floppy/Hard Disk (*UPSD) utility.

b) The procedures of this utility should be familiar.
If not, use the following steps:

- To select the floppy drive, enter RETURN (CR)
- Insert DISPAK diskette, enter RETURN

The Floppy Drive (usually F0) should list as *DPP,
or select directory *DPP.

c) The BASIC Utilities Menu will be displayed.

## Starting DISPAK

The IMPORTANT thing to remember when running DISPAK is that it is
run from the master diskette that you had configured in the
previous step. DO NOT attempt to transfer DISPAK from the diskette
to the hard disk! There are 2 ways of initiating DISPAK:

- From the BASIC Utilities selection message,enter: DISPAK

- From BASIC Console Mode, enter: RUN "DISPAK"

Once DISPAK has been started, a screen is displayed that lists
copyright information. Also listed is the Release and Serial
Number of the software- important information in any correspondence
with your dealer or Concept Omega concerning the software. Proceed
through the Copyright Screen by entering RETURN (CR). The DISPAK
Introductory Screen will appear. This screen is used to insure
that you have carried out certain procedures necessary for proper
operation of DISPAK:

                        DISPAK - Disk Analyzer

    This system is designed to analyze the operating system
    files on your hard disk to insure their integrity
    following power failures or hardware malfunctions. Any
    problems located will be reported to you and will be
    repaired by the system if possible.

    The system can operate successfully only under the
    following conditions:

    You must run the system from a floppy diskette
    A printer MUST be available for hard copy
    No one else may be using the computer
    You must be using the control terminal (T0)

    The following messages will also appear:

        Are you sure you want to continue? (Y/N)
            Y - DISPAK will continue
            N - DISPAK will be terminated

        Are the date and time correct (Y/N)
            Y - DISPAK will continue
            N - Enter the correct date (MMDDYY) <CR>
                Enter the correct time (HHMMSS) <CR>

## Printed Output

Once the printer is selected, the screen will display the processing status. Below is a sample of DISPAK output:

Phase 1 - Verify Environment

Operating system version is S6.5.3
Floppy is disk number 9
Running in bank 1
57882 bytes available memory

Phase 2 - Verify Allocated Space

Analyzing disk unit H60
Label is *MASTER*
Code 08: 61056 indicated sectors,60864 actual sectors
Code 22: Directory UTIL, allocated size is incorrect
Code 22: Directory PROG, allocated size is incorrect
Code 22: Directory WORD, allocated size is incorrect
Code 20: Computed available space disagrees with AVS table

At this point a message appears:
Errors detected. Proceed with repairs? (Y/N)

DISPAK can handle and correct many types of errors but in some cases the operator may need to take manual action in order to repair the system. Errors should be evaluated before proceeding.

Phase 3 - Repairs

System area successfully saved
System HSA updated
     old value was 61056, new value is 60864
System AVS table maximum entries updated
     old value was 405, new value is 450
System AVS table updated, 110 active entries
Directory UTIL, allocated size updated
Directory PROG, allocated size updated
Directory WORD, allocated size updated

At this point a message appears:
Do you want to compress the disk? (Y/N)

This not a mandatory step but will make your system more efficient and may be needed when available disk space becomes fragmented.

Utility Functions

Compress completed     HH:MM

# 3. DISPAK MESSAGES

## Error Messages

Code 01 DISPAK will not run in this environment

> This version of DISPAK and the version of Thoroughbred/OS on your system are not compatible. Contact Concept Omega to obtain the correct version of the software.

Code 02 DISPAK cannot run with any other users online

> The program detects that another user is on the system. Make sure all terminals on the system are in BASIC Console Mode.

Code 03 DISPAK will only run from the control terminal

> DISPAK must be run from the Control Terminal (T0). Go to the correct terminal and start over.

Code 04 DISPAK will not run from a hard disk

> DISPAK must be run from the Master Diskette. Remove any copies transferred to the hard disk and go to the section in the manual that covers configuring and running the software.

Code 05 Program failure

> An unanticipated situation has occurred, contact Product Support at Concept Omega- phone 201-722-9565

Code 06 Uninitialized disk

> The hard disk is not initialized. You must install the Operating System properly before running DISPAK. Correct the problem and start over. If you have 2 hard disks, the 2nd disk does not require BASIC.

Code 07 XXXX indicated sectors, YYYY actual sectors

> The program reads the entire disk and calculates YYYY user sectors and this disagrees with the number being used by the operating system XXXX (YYYY does not include the C.E. sector assignments).
>
> If the operator continues through the reconstruct step of DISPAK, the value XXXX will be replaced by the actual number of sectors YYYY counted.

Code 08 Permanent disk read error 103 sector XXXX

The program cannot read the sector XXXX and the data at this sector is probably lost. Identify the File involved (name and sector) using the List (*LPSD) or Print (*APSD) Disk Directory Utilities. If an adequate backup exists, restore the File, if not you may attempt to backup the data that is still readable.

Code 09 Permanent disk write error 103 sector XXXX

The program has been unable to write sector XXXX and the data is probably lost. This could mean that there are no alternate sectors available for your disk controller to assign to the operating system.

Code 10 XYYY Unknown entry in the table of contents

The table of contents contains system and BASIC language pointers. DISPAK cannot recognize XYYY as a valid entry. If X is blank, contact Product Support at Concept Omega-phone 201-722-9565

If XYYY is a valid directory name, the directory is probably corrupted and your system will need to be re-initialized.

Code 11 Directory XXXX pointer out of range block YYYY

The directory XXXX block YYYY has an invalid value. The operator must recreate the directory by executing the Add/Change Directory (*4PSD) Utility and restore the contents of the directory from a backup.

Code 12 Directory XXXX file YYYY overlaps another file

The program has detected that a file named YYYY on directory XXXX is using sectors on the disk that have been assigned to another file. This means that there is a conflict in allocated space. DISPAK will try to relocate the files in the reconstruct step.

Code 13 Directory XXXX file YYYY overlaps the C.E. or A.T. area

The file YYYY in directory XXXX points to a reserved area on the disk. The C.E. or A.T. area is a privileged section on the disk and should only be used by the system. Therefore there is a conflict in allocated space and DISPAK will relocate the files in the reconstruct step.

Code 14  Directory XXXX file YYYY nonexistant sector

    All or part of file  YYYY in  directory XXXX  is allocated to
    nonexistent  sectors and  therefore is  invalid.  Because  of
    this conflict in allocated space, DISPAK will try to relocate
    the file in the reconstruct  step.  If the entire file is off
    the disk it will be deleted.


Code 15  Directory XXXX file YYYY invalid size

    The file YYYY in directory XXXX  has a  size of less than one
    sector.   The operator  must recreate  the directory by using
    the  Add/Change  Directory  (*4PSD) Utility  and restore  the
    contents of the directory from a backup.


Code 16  Directory XXXX file YYYY invalid description

    The  file YYYY  in directory  XXXX is  not a  valid file type
    recognized  by  the   system.   The   valid  descriptors   in
    Thoroughbred/OS  are D,S,P,I.  The operator must recreate the
    directory using the  Add/Change Directory (*4PSD) Utility and
    restore the contents of the directory from a backup.


Code 17  Directory XXXX file YYYY overlaps system area

    The  file  YYYY  in   directory  XXXX  occupies space  in the
    reserved   area  of   the disk.   Only BASIC  and the  system
    pointers should be in  this area.   Because of  this conflict
    in  allocated space, DISPAK will  try to relocate the files in
    the reconstruct step.


Code 18  Directory XXXX overlaps another directory or file

    The  space allocated  to directory XXXX overlaps another area
    of  the  disk that  is already  allocated to  something else.
    Because  of this conflict in allocated space, DISPAK will try
    and relocate the files in the reconstruct step.


Code 19  Computed available space disagrees with AVS table

    The free space calculated by  the program  is not the same as
    the  AVS currently  indicated by  the system. If you proceed
    with the reconstruct step,  the calculated space will be used
    to update the current AVS table.

Code 20   Directory XXXX,YYYY actual entries counted

The actual number of file name entries counted by the program
for  directory XXXX  disagrees with the count stored.  If you
proceed  with  the   reconstruct  step,  DISPAK  will  update
directory XXXX with YYYY as the number of file entries.

Code 21  Directory XXXX, allocated size is incorrect

The  allocated size of directory XXXX is not large enough for
the number of entries  requested at  initialization.  If  the
reconstruct  step is  executed, DISPAK will adjust the number
of entries in directory  XXXX to  reflect the space allocated
to the directory.

Code 22  Insufficient directory entries for work file

The  program does  not have  enough available name entries to
hold the number of file names required by work files.  DISPAK
requires at least 3  free directory entries available to run.

Code 23  Insufficient available space for work file

There is not enough room on  the disk to allow the program to
build  a work  file required  for the Reconstruct or Compress
steps.  DISPAK requires at least 500 free sectors on the disk
in order to build temporary work files.

Code 24  File XXXX , unknown type. Created as indexed

The program encountered an  invalid file  type (not  D,S,P,I)
during Compress.  The  program will redefine file XXXX as an
indexed file rather than delete it.

Code 25  XXXX is a duplicate directory name

The directory XXXX is defined  more than one time on the hard
disk.  Use the Add/Change Directory (*4PSD) Utility to rename
the directory.

Code 26   Insufficient disk space to move file XXXX

File  XXXX is  too large to be moved by the reconstruct step.
Backup the File and then  erase if  from the hard disk.  Once
DISPAK is finished, you can restore the File.

Code 27  Insufficient disk space to move directory XXXX

Directory XXXX is too large to be moved by the compress step
or Directory XXXX is overlapped by a large file and there is
insufficient available disk space to move either directory
or file. The file involved (reported in a previous message)
should be backed up and then erased from the hard disk.
After DISPAK is finished, you can restore the file.

Code 28  Memory assigned to record buffer is too small

DISPAK requires at least 2K for record buffer size. Use the
BASIC Configurator (*NPSD) Utility (5 Memory Banks) to
increase the memory allocated for record buffers and start
over.

Code 29  File "XXXX" has same name as directory "XXXX"

You will need to manipulate the file and directory names in
order to avoid duplication of names.

1. Rename the directory (use *4PSD).
2. Configure new directory (use *JPSD).
3. Either delete file "XXXX" (using *EPSD) or
   rename file "XXXX" (using *DPSD).
4. Rename directory back to its original name.
5. Reconfigure the directory.

## File Separation Messages

File XXXX  at sectors YYYY through ZZZZ overlaps
          File AAAA at sectors BBBB through CCCC

File named by XXXX is located at physical sector range YYYY
through ZZZZ and overlaps another file that occupies some
sectors within the YYYY to ZZZZ range. The file that it
overlaps is AAAA with a range from BBBB to CCCC.

File XXXX moved to sectors YYYY through ZZZZ.

The file named by XXXX has been relocated by DISPAK and the
new range is from YYYY to ZZZZ.

## Allocation Correction Messages

Old value was AAAA; new value is BBBB

This message appears as part of other DISPAK messages and
informs the operator of the original value and the new value.

System Area Successfully Saved

The DISPAK program informs the operator that the system area
or first 32 sectors has been copied to the floppy.

System HSA updated

DISPAK calculates the valid HSA (Highest Sector Available)
and stores it into the system area of the operating system.

System AVS table updated, XXXX active entries

DISPAK calculates free space on the disk and stores the
information in the system's AVS table. There are XXXX
entries in this table.

System AVS table maximum entries updated

DISPAK adjusted the size of the system AVS table.

Directory XXXX, actual entries in use updated

DISPAK counts the actual number of entries in use in disk
directory XXXX and updates the directory pointers correctly.

Directory XXXX, allocated size updated

If the size of directory XXXX calculated by DISPAK disagrees
with the actual size of this directory, it will be updated
to the calculated size.

# 4. DISK MAP UTILITY

Disk Map is provided to the  user as  an added utility that will prepare
a  sequentially ordered  listing of  your disk  space.  When  run before
DISPAK it will identify the current  state of  your disk with respect to
overlapped files and gaps of sectors that are unavailable to the system.

To run this utility, follow  the standard  procedures for running DISPAK
(see Configuring the Software).  Disk Map can be initiated:

    - From the BASIC Utilities selection message, enter: DISMAP

    - From BASIC Console Mode, enter: RUN "DISMAP"


A message allowing you to select the output device is displayed:

    Select Output Device LP TO ? __

Once selected, no further operator intervention is required!


## Sample Screen

    The following screen is  displayed during  processing.  The  Key to
    this screen should allow you to interpret the analysis:


        DISK ANALYSIS UTILITY          DISK AAAA SYSTEM FILES

                            LOCATION              ENTRIES
                    NAME    START    END      CURRENT    MAXIMUM

                    BBBB    CCCC     DDDD     EEEE       FFFF


                    GGGG   TOTAL SECTORS      HHHH   AVAILABLE

        BUILDING DISK MAP IIII JJJJ


                    Code - Meaning
                    AAAA - Label found on the hard disk
                    BBBB - Directory Name
                    CCCC - Starting sector of the directory
                    DDDD - Ending sector of the directory
                    EEEE - Current number of entries
                    FFFF - Maximum number of entries allowed
                    GGGG - Total sectors on the hard disk
                    HHHH - Available sectors left on the hard disk
                    IIII - Current directory being analyzed
                    JJJJ - Current sector being analyzed

## Disk Map Report

The following report will appear on the output device that you
selected. The Key following should allow you to interpret the
output.

```
              SECTORS           VOLUME  FILE
 ERROR  START  END    SIZE      NAME    NAME   REMARK
 ------------------------------------------------------
 AAAA   BBBB   CCCC   DDDD      EEEE    FFFF   GGGG
```

| Code | Meaning |
|------|---------|
| AAAA | ERROR MESSAGES |

       OVERLAP - The file that appears with this
                  message overlaps the file listed
                  above.

       GAP     - This area is not being used and
                  does not appear on the available
                  sector table.

BBBB - Starting sector of the file
CCCC - Ending sector of the file
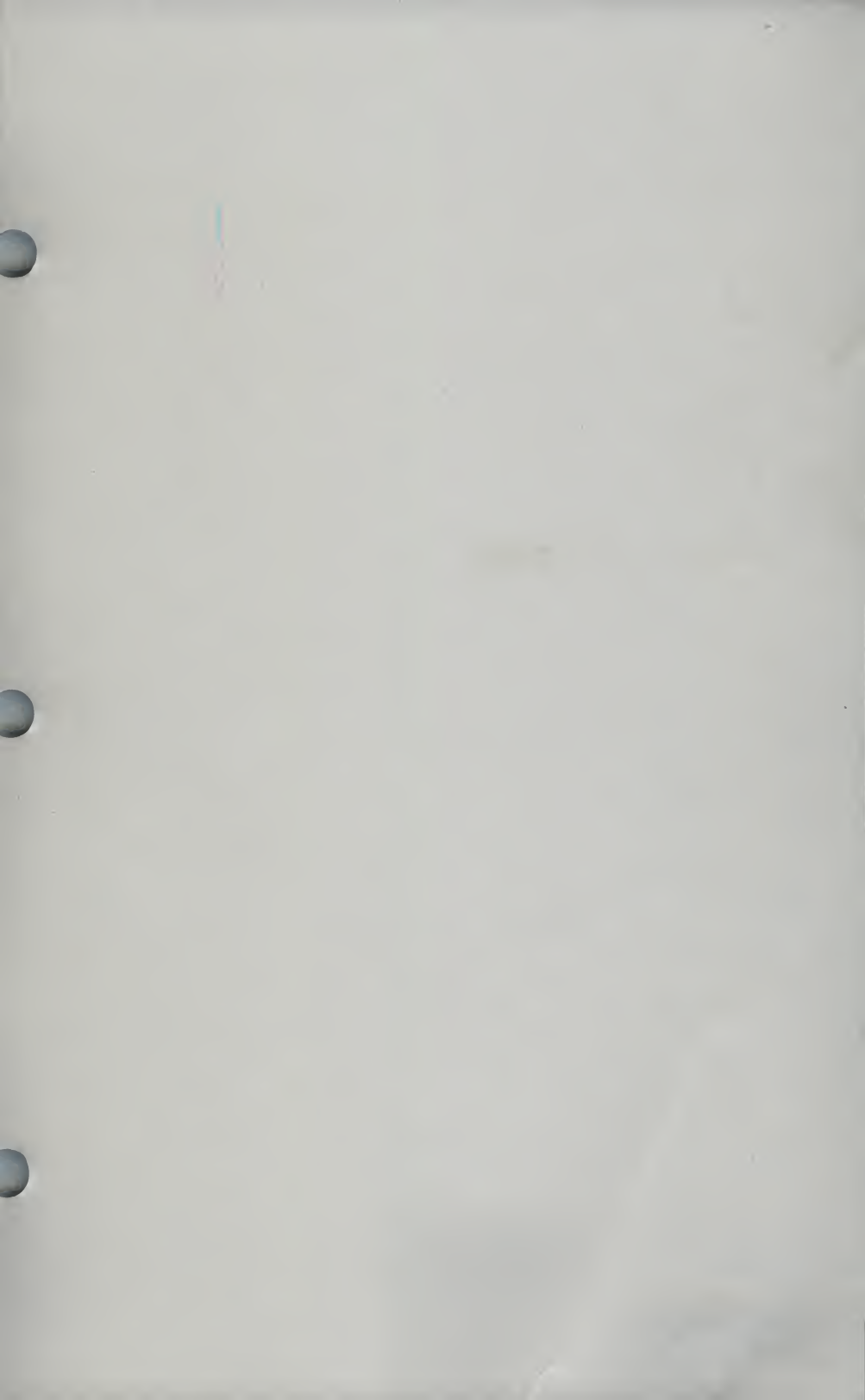DDDD - Size of the file
EEEE - Directory that the file appears
FFFF - File name
GGGG - REMARK

       TEMPORARY - Currently used by DISMAP

       AVAILABLE - Current Available Sector Table